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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/502,170	07/21/2004	Toshiaki Takenaka	MAT-8563US	8532
23122	7590	02/09/2006	EXAMINER	
RATNERPRESTIA P O BOX 980 VALLEY FORGE, PA 19482-0980			ARBES, CARL J	
			ART UNIT	PAPER NUMBER
			3729	
DATE MAILED: 02/09/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/502,170	TAKENAKA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	C. J. Arbes	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 13-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____                                                |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/7/05</u>                                                               | 6) <input type="checkbox"/> Other: _____                                    |

Applicants' Response to the Office's Restriction has been carefully noted.

The Restriction did not restrict Claim 17 into Group I and this was Office's inadvertent error. However with this in mind the Restriction with Claim 17 now incorporated into Group I invention, the Restriction is held now to be proper. It is correct that when Applicants elected Group I invention they also included Claim 17 therein. With that caveat in mind the Restriction which was mailed to Applicants on or about 08 September 2005 is now **made Final**. Applicants are required to cancel all non-elected claims to wit Claims 13-16, or tak other appropriate action.

An Office Actiopn on the merits of claims 1-12 and 17 now follows.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. (Pat No. 6,163,957); hereinafter Jiang et al

Jiang et teach a method for making a circuit board. A copper foil can be used (Cf. Col 3) although Jiang et al teach electroplating Copper onto a flexible polyimide film (Cf. Col 3). A bond sheet (14) is tack laminated onto the back side of the layer (10). The bonding sheets can be made from preregs (Cf Col 4) . The bonding sheet is heated to a temperature which softens but does not cure it. (Cf. Col 4). A tack lamination can be performed at about 100 degrees Celsius for 5 minutes. (Cf Col. 5). After apertures or

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via holes are formed and filled with a non-volatile conductive composition e.g. solder particles or paste (Cf. Col 6) the bonding sheet can be laminated to a second circuit layer at a temperature of for example 180 degrees Celsius for 60 minutes. The paste can contain an epoxy (a thermosetting resin) (Cf. Col 6) According to the evidence in Jiang et al (particularly in Col 10) the process can involve ramping up the temperature from room temperature i.e. approx 25 degrees Celsius to 300 degrees Celsius within 5-10 minutes with a pressure of between 300-400 psi. As applied to Claim 1f in fact Applicants make it an issue to say that Jiang et al do not teach placing a metallic foil onto a substrate the Office retorts that it is well known to use Copper foils when making circuit boards and therefore it would have been obvious to provide a circuit board with a metallic foils rather than by sputtering and electroplating etc. metal onto the substrate. As applied to claims 2, 3, 8 and 17 wherein Applicants recite that a prepreg sheet is heated and pressurized to a third heating temperature which is higher than a second heating temperature one can easily see and understand that Jiang et al heats and pressurizes through a continuous range of temperatures which are from 25-300 (as pointed out above) and therefore a POSITA, given the evidence in Jiang et al, would have found it to have been obvious to carry out this recited limitation i.e. heat the prepreg sheet to a temperature which is higher than a second temperature which is higher than a first temperature. As applied to claims 10-12 it is held that these limitations are each within the ordinary skill in the art and therefore add little or nothing to patentability of the claimed invention. That is the use of aromatic polyamide as opposed to Jiang et al's using polyimide, the limitation of woven cloth as the material for


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the substrate and the compressibility of the prepreg being less than 10% is within the ordinary skill of a POSITA. Alternatively these limitations are held to be mere design choice inasmuch as Applicants fail to articulate a particular purpose therefore or the solve a specific problem therewith.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. J. Arbes whose telephone number is 571-272-4563. The examiner can normally be reached on M, T, R and F from 8 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, P. Vo, can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
C. J. Arbes  
Primary Examiner  
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